95 per cent. were destroyed. In the West Indies the Bourbon cane has been given up on account of disease, but very useful and disease-resisting hybrids have been produced by crossing the valuable but easily attacked Tjeribon cane with the resistant Indian Tschan cane.

It will thus be seen that breeders have the power by careful selection to combine disease-resisting powers with relatively great fertility, and therein lies our hope for the future success of agriculture.

THE BED OF THE WESTERN PACIFIC OCEAN.

THE results of surveys carried out by the surveying vessel *Edi* and the cable-ship *Stephan* during 1903 and 1905 in the western and south-western parts of the Pacific Ocean have been published in a paper by Drs. G. Schott and P. Perlewitz, recently issued in the *Archiv der deutschen Seewarte*. An abstract by Dr. Schott appears in the *Annalen der Hydrographie* (1907, p. 108). Taken in conjunction with the work of the American vessel *Nero* (already noticed in these columns) and of the German vessel S.M.S. *Planet* (see *Annalen der Hydrographie*, 1907, pp. 49 and 50, 193 and 194, and 196), these soundings throw a great deal of new light on the configuration of the sea bottom in those regions, disclosing certain characteristic features of great interest in their bearing on the history of the Pacific Ocean and its extension westward at the expense of the Asiatic continent, and also on the general problem of the form of the surface of the lithosphere.

The typical form may be described thus. Along a line running seaward from the coast of Asia the depth is (beyond the continental shelf) about 3000 metres; it diminishes slowly and fairly uniformly at first, then rapidly, until the surface is reached on a cross-line of islands. To seaward of the islands the bottom falls first slowly and then very steeply to a line of "deeps," in which depths of 7000 metres to 9000 metres are reached; then follows a fairly gradual rise to a "Horst" some 4000 metres below the surface. These structures, so far as appears from these observations, occur (1) in the Liu-Kiu Islands and deep; (2) in the Tulur Islands and deep; and (3) in a line following the Pelew Islands, Yap, Guam, and the eastern Ladrones. The soundings of the *Planet* show that the "Tulur" deep (2) is continuous with a long, narrow trough extending northward along the east coast of the Philippines, and it seems not unlikely that the "Liu-Kiu" deep (1) is part of the same depression. The "Guam" deep is identical with the "Caroline" deep discovered by Friederichsen in 1901.

The troughs forming the deeps are usually about ten miles wide (the Guam deep is as much as twenty miles across), and Drs. Schott and Perlewitz are of opinion that they are the result of subsidence occurring on an enormous scale along lines of fracture. It is probable that the disturbances which produced these structures are comparatively recent; geological relations suggest Tertiary times, at least in the case of the Liu-Kiu deep, and there is obviously nothing in the suggestion incompatible with the great antiquity of the Pacific basin as a whole.

HYDROLOGY IN EGYPT.

"THE Rains of the Nile Basin and the Nile Flood of 1906" is the first of a new series of periodical reports which are being published by the Survey Department of Egypt. These departmental papers are intended to comprise results of technical or scientific interest which are obtained in the course of the work of the department.

Captain H. G. Lyons, the director, says that although the increase of rainfall stations in British Central Africa, Uganda, and the Sudan has materially reduced the difficulty of forecasting the flood, the absence of any definite information as to the meteorological conditions of Abyssinia, especially during the rainy season, June to August, is a great drawback, and to overcome this somewhat he intended early in 1907 to send a qualified meteorologist to Addis Abbaba to study the local conditions.

The chapter on the normal distribution of rainfall traces the heavy rains from Zomba and British Central Africa and German East Africa in January and February to Abyssinia and the Sudan in July and August. During these two months these countries receive 60 per cent. of their annual rainfall. In September the rain begins to moderate in Abyssinia, and to retreat southwards.

In discussing the rainfall for 1906, it is shown that most places in the districts under observation had excess rain at the period of normally heavy rains, whilst in their respective dry seasons there was deficiency. In the Nile Basin the rains were somewhat late in commencing.

At the end of October, 1905, it seemed likely that during 1906 the Nile would be low, for the summer rains in Abyssinia had been weak. In November, February, and March some exceptional and heavy rains improved matters, and gave a fairly good supply of water.

At Khartoum the flood commenced on May 27, sixteen days late, and reached its maximum on September 14, ten days late. The volume of the flood estimated from the discharge curve of the Aswan gauge during July, August, September, and October was 0·87 of the mean of thirty-eight years.

During April, 1906, Mr. J. I. Craig made an investigation to determine the amount of seepage through the banks of the river. Using the records of flow at Aswan and Sarras, and special observations of flow made at Kareima, Mr. Craig came to the conclusion that at the period of low water, and on that stretch of the river between Khartoum and Sarras, a distance of 1480 kilometres, water flowed through the banks into the river at the rate of between 140 and 200 cubic metres per second. During the flood water passes out of the river similarly, for then the level of the water-table in the surrounding country is lower than the surface of the river.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—The Sites Syndicate has had under consideration the most suitable position for the proposed buildings in connection with the school of agriculture. It is of opinion that the most suitable position would be one on the Downing site, to the south of the botany school and parallel with it. The building on this site would be near the departments of botany and geology, and would be accessible from three roads, and it would be well lighted. At the present time the department of agriculture is housed in the basement of the chemical laboratory, but in view of the greatly increasing number of students in agriculture proper provision of laboratories, lecture-room, and museums is urgently needed. Towards the cost of an agricultural school some 13,000*l.* has already been subscribed by friends of agriculture and the University. A suitable building would probably cost some 20,000*l.*, and it is further desirable that some provision should be made for maintenance.

Mr. A. E. Shipley has been nominated a manager of the Frederick James Quick fund from January 1, 1908, to December 31, 1913.

The following have been nominated examiners for the Natural Sciences Tripos in 1908:—*Physics*, Mr. J. A. McClelland and Mr. P. V. Bevan; *chemistry*, Dr. Fenton and Mr. K. J. P. Orton; *mineralogy*, Mr. A. Hutchinson and Mr. L. J. Spencer; *human anatomy*, Mr. T. Manners-Smith and Prof. R. Howden; *geology*, Mr. E. J. Garwood and Mr. W. G. Fearnsides; *botany*, Mr. F. W. Oliver and Mr. F. F. Blackman; *zoology*, Dr. Harmer and Mr. R. C. Punnett; *physiology*, Mr. F. G. Hopkins and Dr. M. S. Pembrey.

OXFORD.—The preamble of a statute establishing a professorship of engineering science was passed by Congregation on October 29 by a majority of 152 to 20.

The Burdett-Coutts scholarship in geology has been awarded to R. L. Robinson, Magdalen College; C. H. Dinham, Magdalen College, distinguished himself in the examination.

LORD AVEBURY has been elected without opposition Lord Rector of the University of St. Andrews.

ACCORDING to the *Pioneer Mail*, one lakh of rupees has been added to the Griffith bequest to found a university library attached to the Madras University, and another sum of sixty thousand rupees for university lectureships and research scholarships.

AT a recent meeting of the Senate of the University of London, the following resolution was unanimously adopted:—"That the Senate have received with sincere regret the announcement by Sir Arthur Rücker that he wishes to relinquish office on September 30, 1908, and record their appreciation of the great services he has loyally rendered to the University as principal since its reconstitution."

THE graduate school of applied science at Harvard University recently received the gift of about 2000 acres of valuable timber land as a special adjunct to its instruction in forestry. According to Prof. R. T. Fisher, the forest included in this gift comprises the best body of timber now to be found on an equal area in Massachusetts. Its special advantage is in the arrangement of the age-groups or generations of timber. It so happens that stands of various ages, from the small sapling to the mature tree, are almost equally represented in separate sections of the forest.

THE annual prize distribution and conversazione of the Northampton Polytechnic Institute, Clerkenwell, E.C., will be held on Friday and Saturday, November 29 and 30. The Duke of Connaught has consented to distribute the prizes on November 29, and after the prize distribution the whole of the laboratories, workshops, drawing office, and studios of the institute, both in the main building and in the British Horological Institute adjoining (the technical optics department), will be on view in working order. The conversazione of members and students will be held on the following evening.

THE Board of Education, South Kensington, has issued the following list of candidates successful in this year's competition for the Whitworth scholarships and exhibitions:—(1) Scholarships, 125*l.* a year each, tenable for three years: A. A. Rowse, London; N. J. Perryman, Portsmouth; G. Hudson, Portsmouth; J. Warren, Portsmouth. (2) Exhibitions, 50*l.* a year each, tenable for one year: A. W. Judge, Portsmouth; J. H. Hyde, Leytonstone; E. A. Steed, Devonport; A. J. Begg, Plumstead; M. R. Dewhurst, London; R. D. Given, Edinburgh; F. A. Bumpus, Birmingham; R. J. Iliffe, Liverpool; S. L. Symns, London; F. Morris, Portsmouth; W. P. Johnson, Kelsall Hill, Chester; T. W. Johnstone, Neyland; J. H. Neal, Devonport; H. Mawson, Hunslet, Leeds; E. W. Stedman, Sheerness; F. Morrison, Aberdeen; R. G. Milner, Plumstead; A. Hutchison, Glasgow; H. J. Middleton, Forest Gate; A. T. Phillips, Barking, Essex; W. Macgregor, Greenock; M. J. C. McCarthy, Sheerness; H. T. Wright, London; A. McFadyen, Lasswade, Midlothian; F. G. Rendell, Portsmouth; J. H. Blight, Devonport; F. C. D. Mann, Hayes, Kent; J. E. Collyer, South Woolwich; B. Baker, Southsea; L. C. Brown, Wolverton.

MR. ASQUITH, Chancellor of the Exchequer, visited Aberystwyth on November 1 to open the Edward Davies chemical laboratories, the gift of Mr. David Davies, M.P., and his mother and sisters, to the University College of Wales, Aberystwyth. The new buildings have been erected at a cost of 25,000*l.* In the course of a speech at a great public meeting held subsequently, Mr. Asquith said Aberystwyth has owed little, at all events, until that day to the munificence of the man of wealth, and there are very few other institutions, either in England or in Wales, of which it can be said that it was brought into being and that for many years it was kept in being by the pence of the Welsh people. There are few more interesting or encouraging chapters in the history of democracy than that which recounts what in our time the Welsh people has done for education. In the course of thirty years something very near 120,000*l.* has been subscribed for the purposes of the college, Aberystwyth, and the remarkable feature is that it has been subscribed by 100,000 separate donors. The figures no doubt are equally striking at Bangor and Cardiff. The university system in Wales has been undertaken by the people for the people. During the same period there has been voluntarily subscribed to set on foot a system of intermediate schools something approaching the same sum—80,000*l.* to 100,000*l.* There is still much work to be done, many gaps to be filled; but the Welsh people formed their intermediate system first of all, and now, by the founding of their university colleges, any Welsh child of brains, zeal, and good character, whatever the social surroundings of its parentage, can climb without undue favour or assistance to the very highest position in the pursuits of industry or commerce.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, June 27.—"Note on the Use of the Radiometer in observing Small Gas Pressures; Application to the Detection of the Gaseous Products produced by Radioactive Bodies." By Sir James **Dewar**, F.R.S.

The experiments described in this paper seem to show that the radiometer may be used as an efficient instrument of research for the detection of small gas pressures and the study of radio-active products. For quantitative measurements the torsion balance or bifilar suspension must be employed. It would be interesting to repeat light repulsion experiments in the highest attainable charcoal vacuum. The author hopes to extend the investigation later.

Entomological Society, October 16.—Mr. C. O. Waterhouse, president, in the chair.—*Exhibits.*—A. H. **Jones**: A series of *Pieris napi*, var. *bryoniae*, from comparatively low altitudes near Budapest, showing a wide range of variation, and a remarkable aberration of *P. napi* (*napaeae*) bearing a strong resemblance on the underside to *P. rapae*.—M. **Burr**: An example of *Apterygida albipennis*, discovered by him near Dover this year; and a ♂ specimen of *D. verrucovirus*, an inhabitant of Scandinavia, from the same locality.—H. **Campion**: *Platycleis roeselii*, Hagenb., ♀, taken September 13 near Herne Bay, of which there are but few well-authenticated British specimens.—E. W. **Campion**: An aberrant specimen of *S. sanguineum*, ♂, from Epping Forest, suggesting relationship with certain Orthoptera, and two *Calopteryx virgo* of his own from the New Forest showing failure in pigment.—W. J. **Kaye**: Specimens of *Callicore aurelia*, Guen., together with a photograph of its larva, showing the remarkable branch-like horns rising out of the head.—Rev. F. D. **Morice**: A normal ♂ specimen of the bee *Anthidium manicatum*, L. (the "hoop-shaver bee" of Gilbert White's "Natural History of Selborne"), and a monstrosity or malformation of the same insect from Argentat, Corrèze, France.—C. O. **Waterhouse**: (1) A living ant, a species of Camponotus, found by Mr. Watson at Kew, in the pseudobulb of an orchis (probably a Bulbophyllum) from the Gold Coast. The bulb was much excavated, but it had no opening by which the ant could have entered; (2) a large wasp (a Salius allied to *dedjax*) with a spider, a Mygale rather larger than itself, but which it had captured and was carrying off.—Lieut.-Colonel Neville **Manders**: A melanic variety of *Hestina nama*, captured near Darjeeling, and a monstrosity of *Papilio krishna*, from Sikkim, in which the wings on the right side were much larger than those on the left.—H. **Main**: The larva of a hymenopterous parasite of *Pygaera bucephala*, of great size comparatively to its host.

Institution of Mining and Metallurgy, October 17.—Prof. William Gowland, president, in the chair.—The origin of the gold in the Rand banket: Prof. J. W. **Gregory**. A carefully reasoned argument in favour of the marine placer theory, as opposed to the infiltration theory. The author quoted the leading authorities both for and against his own conclusions, which are based on a personal visit to the Rand and a subsequent weighing of all available evidence. After a brief historical introduction, the paper was subdivided under the following heads:—theories of the genesis of the Rand gold; the rocks of the Rand goldfield; the arguments against the placer theory; evidence against the infiltration theory; evidence of the microscopic structure of the rocks; com-